



Governor

Lori F. Kaplan
Commissioner

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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Mr. Kenneth Rush
Sellersburg Stone Company, Inc.
P.O. Box D,
Sellersburg, Indiana 47172

October 28, 2002

Re: 019-15940-03109
Significant Permit Revision to
FESOP 019-15036-03109

Dear Mr. Rush:

Sellersburg Stone Company, Inc. was issued a permit on August 19, 2002 for a stationary hot mix asphalt plant. A letter notifying the Office of Air Quality of the addition of one (1) portable dry additive silo was received on April 26, 2002. Pursuant to the provisions of 326 IAC 2-8-11.1(g)(2) a significant permit revision to this permit is hereby approved as described in the attached Technical Support Document. All other conditions of the permit shall remain unchanged and in effect. For details please see the Technical Support Document.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Alic Bent, c/o OAQ, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or call (973) 575-2555, extension 3206 or dial (800) 451-6027, press 0 and ask for extension (3-6878),

Sincerely,
Original signed by

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

Attachments

AB/EVP

cc: File - Clarke County
U.S. EPA, Region V
Clark County Health Department
Air Compliance Section Inspector - Ray Schick
Compliance Data Section - Karen Nowak
Technical Support and Modeling - Michelle Boner



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FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP) Renewal OFFICE OF AIR QUALITY

Sellersburg Stone Company Inc.
1019 East Utica Street
Sellersburg, Indiana 47172

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-8 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Operation Permit No.: F019-15036-03109	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: August 19, 2002 Expiration Date: August 19, 2007

First Significant Permit Revision 019-15940	Pages Affected: 1, 4, 5, 26, 34, 35 and 36
Issued by: Original signed by Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: October 28, 2002

D.3.1 Record Keeping Requirements [326 IAC 12] [40 CFR 60.110b, Subpart Kb]

SECTION D.4 FACILITY OPERATION CONDITIONS

One (1) portable dry additive silo

Emission Limitations and Standards [326 IAC 2-8-4(1)]

- D.4.1 Particulate Matter (PM) [326 IAC 6-3]
- D.4.2 Particulate Matter (PM) [326 IAC 2-2]
- D.4.3 Particulate Matter Less Than Ten Microns (PM-10) [326 IAC 2-8]
- D.4.4 Relocation of Portable Facility [326 IAC 2-14-4]
- D.4.4 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

Compliance Determination Requirements

- D.4.5 Particulate Matter (PM)

Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]

- D.4.6 Visible Emissions Notations
- D.4.7 Parametric Monitoring
- D.4.8 Baghouse Inspections
- D.4.9 Broken or Failed Bag Detection

Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

- D.4.10 Record Keeping Requirements

SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-8-3(b)]

The Permittee owns and operates two (2) stationary hot drum-mix asphalt plants.

Authorized Individual:	Diane M. Green
Source Address:	1019 East Utica Street, Sellersburg, IN 47172
Mailing Address:	P.O. Box D, Sellersburg, IN 47172
SIC Code:	2951
Source Location:	Clark
County Status:	Nonattainment for ozone Attainment for all other criteria pollutants
Source Status:	Federally Enforceable State Operating Permit (FESOP)

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-8-3(c)(3)]

The stationary source consists of the following emission units and pollution control devices:

Plant #1:

- (a) One (1) 30,000 gallon liquid asphalt storage tank for asphalt cement.
- (b) One(1) 20,000 gallon liquid asphalt storage tank for asphalt cement.
- (c) One (1) hot drum mixer, identified as Unit #2, with a maximum capacity of 600 tons of asphalt per hour, equipped with one (1) drum mix dryer utilizing natural gas at a maximum rated capacity of 200 million British thermal units per hour (MMBtu/hr), using one (1) baghouse for particulate control, and exhausting to one (1) stack, S/V ID #1.
- (d) One (1) portable dry additive silo, using a pump with a maximum filling rate of ten (10) tons per hour, and controlled by one (1) baghouse.

Plant # 2:

- (e) One (1) aggregate drum-mix dryer (Unit # 1), installed in 1999, with a maximum capacity of 300 tons per hour, equipped with one (1) dryer burner fired either by natural gas, No. 2 distillate or No. 6 residual fuel oil with a maximum heat input capacity of 116 million British thermal unit (MMBtu) per hour, using one (1) baghouse for particulate matter control, and exhausting at one (1) stack identified as SV2-1.
- (f) Two (2) 30,000 gallon liquid asphalt storage tanks (ID Nos. T-03 and T-04), constructed in 1999.
- (g) One (1) 15,000 gallon liquid asphalt storage tank (ID No. T-05), constructed in 1999.
- (h) One (1) 25,000 gallon No. 2 distillate or No. 6 residual fuel oil storage tank (ID No. T-06), constructed in 1999.

- (i) Cold-mix cutback asphalt manufacturing operation.

D.1.4 Particulate Matter (PM and PM-10) [326 IAC 2-2][40 CFR 52.21][326 IAC 2-8-4]

The source shall comply as follows:

- (a) The combined total production of asphalt mix in Plant # 1 and Plant # 2 shall be limited to 4,000,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (b) Based on the production limit in (a), the PM emissions from each drum-mix aggregate mixing and drying operations shall be limited to 0.039 pounds of PM emitted per ton of asphalt produced, equivalent to less than 11.88 pounds per hour (equivalent to 52.04 tons per year) from the drum-mix aggregate dryer at plant # 1 (SV1) and less than 5.94 pounds per hour (equivalent to 26.02 tons per year) from the drum-mix aggregate dryer at plant # 2 (SV2-1).
- (c) PM-10 emissions from each drum-mix aggregate mixing and drying operations shall be limited to 0.026 pounds of PM10 emitted per ton of asphalt produced (based on annual asphalt production limit of 4,000,000 tons per year), equivalent to less than 7.99 pounds per hour (equivalent to 35.0 tons per year) from the drum-mix aggregate dryer at Plant # 1 (SV1), and less than 4.0 pounds per hour (equivalent to 17.50 tons per year) from the drum-mix aggregate dryer at Plant #2 (SV2-1).

SECTION D.4 FACILITY CONDITIONS

Facility Description [326 IAC 2-8-4(10)]:

One (1) portable dry additive silo, using a pump with a maximum filling rate of 10 tons per hour, and controlled by one (1) baghouse.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-8-4(1)]

D.4.1 Particulate Matter (PM) [326 IAC 6-3]

Pursuant to 326 IAC 6-3 (Process Operations), the allowable PM emission rate from the portable dry additive silo shall not exceed 19.18 pounds per hour when operating at a process weight rate of 10 tons per hour.

The pounds per hour limitations were calculated with the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

D.4.2 Particulate Matter (PM) [326 IAC 2-2]

The PM emission from the portable dry additive silo shall not exceed 1.21 pounds per hour, which is equivalent to 5.3 tons per year. Compliance with this limit shall render the requirements of 326 IAC 2-2 not applicable.

D.4.3 Particulate Matter Less Than Ten Microns (PM-10) [326 IAC 2-8]

Pursuant to 326 IAC 2-8, the PM-10 emissions from the portable dry additive silo shall not exceed 1.21 pounds per hour, which is equivalent to 5.3 tons per year.

D.4.4 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and its control device.

Compliance Determination Requirements

D.4.5 Particulate Matter (PM)

In order to comply with D.4.2 and D.4.3, the baghouse for PM and PM-10 control shall be in

operation and control emissions from the portable dry additive silo at all times that the portable dry additive silo is in operation.

Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]

D.4.6 Visible Emissions Notations

- (a) Visible emission notations of the portable dry additive silo stack exhaust shall be performed once per shift during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed. Failure to take response steps in accordance with Section C - Compliance Response Plan -Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.

D.4.7 Parametric Monitoring

The Permittee shall record the total differential static pressure across the baghouse used in conjunction with the portable dry additive silo, at least once per shift when the portable dry additive silo is in operation. When or any one reading, the pressure drop across the baghouse is outside the normal range of 3.0 and 6.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Compliance Response Plan -Failure to Take Response. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Compliance Response Plan -Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.

The instrument used for determining the pressure shall comply with Section C - Pressure Gauge and Other Instruments Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

D.4.8 Baghouse Inspections

An inspection shall be performed each calendar quarter of all bags controlling the portable dry additive silo when venting to the atmosphere. A baghouse inspection shall be performed within three months of redirecting vents to the atmosphere and every three months thereafter. Inspections are optional when venting to the indoors. All defective bags shall be replaced.

D.4.9 Broken or Failed Bag Detection

In the event that bag failure has been observed:

- (a) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if there are no visible emissions or if the event qualifies as an emergency and the Permittee satisfies the emergency provisions of this permit (Section B- Emergency Provisions). Within eight (8) business hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised within eight (8) business hours of discovery of the failure and shall include a timetable for completion. Failure to take response steps in accordance with Section C - Compliance Response Plan -Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.
- (b) For single compartment baghouses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

D.4.10 Record Keeping Requirements

- (a) To document compliance with Condition D.4.6, the Permittee shall maintain records of visible emission notations of the portable dry additive silo stack exhaust once per shift.
- (b) To document compliance with Condition D.4.7, the Permittee shall maintain the per shift records of the total differential static pressure during normal operation.
- (c) To document compliance with Condition D.4.8, the Permittee shall maintain records of the results of the inspections required under Condition D.4.8 and the dates the vents are redirected.
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

October 28, 2002

**Indiana Department of Environmental Management
Office of Air Quality**

**Technical Support Document (TSD) for a Significant Permit Revision to a
Federally Enforceable State Operating Permit**

Source Background and Description

Source Name:	Sellersburg Stone Company, Inc.
Source Location:	1019 East Utica Street, Sellersburg, IN 14172
County:	Clark
SIC Code:	2951
Operation Permit No.:	F019-15036-03109
Operation Permit Issuance Date:	August 19, 2002
Permit Revision No.:	019-15940-00011
Permit Reviewer:	Alic Bent / EVP

The Office of Air Quality (OAQ) has reviewed a significant permit revision application from Sellersburg Stone Company, Inc. relating to modification to a stationary hot drum-mix asphalt producing source.

History

On April 26, 2002, Sellersburg Stone Company, Inc. submitted an application to the OAQ requesting a revision to their existing FESOP which was issued on August 19, 2002. The revision include the addition of one (1) portable dry additive silo.

New Emission Units and Pollution Control Equipment Receiving Prior Approval

The application includes information relating to the construction and operation of the following equipment pursuant to 326 IAC 2-7-5(16):

One (1) portable dry additive silo, using a pump with a maximum filling rate of ten (10) tons per hour, and controlled by one (1) baghouse.

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted facilities operating at this source during this review process.

Existing Approvals

The source has been operating under previous approvals including, but not limited to, the following:

- (a) FESOP F019-5424-03109, issued on December 9, 1996;
- (b) First Minor Modification 019-8782-03109, issued on October 14, 1997;

- (c) Second Minor Modification 019-9865-03109, issued on September 14, 1998;
- (d) First Significant Modification 019-9885-03109, issued on October 28, 1998;
- (e) First Significant Permit Revision 019-11077-03109, issued on October 25, 1999;
- (f) First Administrative Amendment 019-11859-03109, issued on March 22, 2000;
- (g) Second Significant Permit Revision 019-13962-03109, issued on August 30, 2001; and
- (h) FESOP Renewal 019-15036-03109, issued on August 19, 2002.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
no data	Silo	no data	0.38	1090	100

Recommendation

The staff recommends to the Commissioner that the Significant Permit Revision be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on April 26, 2002. Additional information was received on July 31, 2002.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (Appendix A, pages 6, 9, 11 and 12 of 14).

Potential To Emit of the Revision

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

Pollutant	Potential To Emit (tons/year)
PM	11.86
PM-10	11.86
SO ₂	0.00
VOC	0.00
CO	0.00

NO _x	0.00
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Note: For the purpose of determining Title V applicability for particulates, PM-10, not PM, is the regulated pollutant in consideration.

Justification for Modification

The Federally Enforceable State Operating Permit is being modified through a Significant Permit Revision. This revision is being performed pursuant to 326 IAC 2-8-11.1(g)(2), because it is a modification that requires an adjustment to the existing emissions cap limitations.

County Attainment Status

The source is located in Clark County.

Pollutant	Status
PM-10	attainment
SO ₂	attainment
NO ₂	attainment
Ozone	moderate nonattainment
CO	attainment
Lead	attainment

- (a) Volatile organic are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Clark County has been designated as nonattainment for ozone.
- (b) Clark County has been classified as attainment for all other pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21 and Emission Offset, 326 IAC2-3.

Potential to Emit After Controls for the Modification

The table below summarizes the total potential to emit, reflecting all limits, of the significant emission units.

Process/emission unit	Potential to Emit After Issuance (tons/year)						
	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
Dryer/Burner & Mixer (SV1 and SV2-1)	83.35 78.05	57.80 52.50	98.98	18.61	42.51	95.49	6.20 (single HAP)
Conveying/Handling	5.16	2.44	-	-	-	-	-
Storage Piles	0.25	0.09	-	-	-	-	-
Unpaved Roads	159.97	38.41	-	-	-	-	-
Coldmix Operation	-	-	-	80.15	-	-	-
Hot oil heater (as insignificant activity)	0.27	0.27	0.01	0.20	0.51	3.51	negl.

Dry Additive Silo⁽¹⁾	5.30	5.30	0.00	0.00	0.00	0.00	0.00
Total PTE After Issuance	249	99	99	99	43.02	99	15.90 (total HAP)

(1) Source requested allowable limit.

The dryer/burner PM and PM-10 allowable emissions were adjusted to create cap room for the dry additive silo. Bolded language has been added and the language with a line through it has been deleted. The source FESOP status does not change as a result of this addition.

Federal Rule Applicability

There are no new federal rules applicable to this source because of this Significant Permit Revision. The applicability determination conducted for the Federally Enforceable State Operating Permit FESOP 019-15036-03109, issued on August 19, 2002 remains unchanged.

State Rule Applicability - Entire Source

There are no new state rules applicable to this source because of this Significant Permit Revision. The applicability determination conducted for the Federally Enforceable State Operating Permit FESOP 019-15036-03109, issued on August 19, 2002 remains unchanged. However, the following requirements also apply to the new unit:

326 IAC 2-8-4 (FESOP)

Pursuant to 326 IAC 2-8 (FESOP) the PM-10 emissions from the baghouse controlling the dry additive silo shall not exceed 1.21 pounds per hour, which is equivalent to 5.3 tons per year, based on 8,760 hours of operation per year. The source-wide potential to emit of PM-10 will remain less than 100 tons per year.

State Rule Applicability - Individual Facilities

326 IAC 6-3-2 (Process Operations)

The particulate matter (PM) from the Dry Additive Silo shall be limited to 19.18 lbs/hr based on the following:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

$$E = 4.10 (10)^{0.67} \\ E = 19.18$$

The baghouse is not required in order to comply with 326 IAC 6-3-2 (Process Operations) since the potential to emit of the dry additive silo is limited to 1.21 lb/hr < 19.18 lb/hr. The source will use the baghouse to control the PM emissions.

Compliance Requirements

Permits issued under 326 IAC 2-8 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-8-4. As a result, compliance

requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The following new compliance requirements were incorporated into this FESOP permit:

1. The portable dry additive silo has applicable compliance monitoring conditions as specified below:
 - (a) Visible emissions notations of the baghouse stack exhaust, shall be performed once per shift during normal daylight operations when exhausting to the atmosphere. A trained employee will record whether emissions are normal or abnormal.
 - (b) The Permittee shall record the total differential static pressure across the baghouse, at least once per shift when the portable dry additive silo is in operation. Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the pressure drop across the baghouse shall be maintained within the range of 3.0 to 5.0 inches of water or a range established during the latest stack test.
 - (c) An inspection shall be performed each calendar quarter of all bags controlling the portable dry additive silo when venting to the atmosphere. A baghouse inspection shall be performed within three months of redirecting vents to the atmosphere and every three months thereafter. Inspections are optional when venting indoors. All defective bags shall be replaced.

These monitoring conditions are necessary because the baghouse for the portable dry additive silo must operate properly to ensure compliance with the 326 IAC 2-8 (FESOP) allowable limit.

Changes Proposed

The following changes are made as the Significant Permit Revision to FESOP No. 019-15036-03109. (New is shown in bold and deleted language is shown with a line through it):

1. Section A.2 has been revised to include the new dry additive silo and the subsequent units have been re-lettered.

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-8-3(c)(3)]

The stationary source consists of the following emission units and pollution control devices:

Plant #1:

- (a) One (1) 30,000 gallon liquid asphalt storage tank for asphalt cement.
- (b) One(1) 20,000 gallon liquid asphalt storage tank for asphalt cement.
- (c) One (1) hot drum mixer, identified as Unit #2, with a maximum capacity of 600 tons of asphalt per hour, equipped with one (1) drum mix dryer utilizing natural gas at a maximum rated capacity of 200 million British thermal units per hour (MMBtu/hr), using one (1) baghouse for particulate control, and exhausting to one (1) stack, S/V ID #1.
- (d) One (1) portable dry additive silo, using a pump with a maximum filling rate of ten (10) tons per hour, and controlled by one (1) baghouse.**

Plant # 2:

- ~~(de)~~ One (1) aggregate drum-mix dryer (Unit # 1), installed in 1999, with a maximum capacity of 300 tons per hour, equipped with one (1) dryer burner fired either by natural gas, No. 2 distillate or No. 6 residual fuel oil with a maximum heat input capacity of 116 million British thermal unit (MMBtu) per hour, using one (1) baghouse for particulate matter control, and exhausting at one (1) stack identified as SV2-1.
 - ~~(ef)~~ Two (2) 30,000 gallon liquid asphalt storage tanks (ID Nos. T-03 and T-04), constructed in 1999.
 - ~~(fg)~~ One (1) 15,000 gallon liquid asphalt storage tank (ID No. T-05), constructed in 1999.
 - ~~(gh)~~ One (1) 25,000 gallon No. 2 distillate or No. 6 residual fuel oil storage tank (ID No. T-06), constructed in 1999.
 - ~~(hi)~~ Cold-mix cutback asphalt manufacturing operation.
2. The dryer/burner PM and PM-10 allowable emissions were adjusted to create cap room for the dry additive silo.

D.1.4 Particulate Matter (PM and PM-10) [326 IAC 2-2][40 CFR 52.21][326 IAC 2-8-4]

The source shall comply as follows:

- (a) The combined total production of asphalt mix in Plant # 1 and Plant # 2 shall be limited to 4,000,000 tons per twelve (12) consecutive month period with compliance determined at the end of each month.
- (b) Based on the production limit in (a), the PM emissions from each drum-mix aggregate mixing and drying operations shall be limited to ~~0.04167~~ **0.039** pounds of PM emitted per ton of asphalt produced, equivalent to less than ~~42.69~~ **11.88** pounds per hour (equivalent to ~~55.57~~ **52.04** tons per year) from the drum-mix aggregate dryer at plant # 1 (SV1) and less than ~~6.34~~ **5.94** pounds per hour (equivalent to ~~27.78~~ **26.02** tons per year) from the drum-mix aggregate dryer at plant # 2 (SV2-1).

- (c) PM-10 emissions from each drum-mix aggregate mixing and drying operations shall be limited to ~~0.029~~ **0.026** pounds of PM10 emitted per ton of asphalt produced (based on annual asphalt production limit of 4,000,000 tons per year), equivalent to less than ~~8.80~~ **7.99** pounds per hour (equivalent to ~~38.54~~ **35.0** tons per year) from the drum-mix aggregate dryer at Plant # 1 (SV1), and less than ~~4.40~~ **4.0** pounds per hour (equivalent to ~~49.27~~ **17.50** tons per year) from the drum-mix aggregate dryer at Plant #2 (SV2-1).

3. Section D.4 has been added for the new dry additive silo.

SECTION D.4 FACILITY CONDITIONS

Facility Description [326 IAC 2-8-4(10)]:

One (1) portable dry additive silo, using a pump with a maximum filling rate of 10 tons per hour, and controlled by one (1) baghouse.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

D.4.1 Particulate Matter (PM) [326 IAC 6-3]

Pursuant to 326 IAC 6-3 (Process Operations), the allowable PM emission rate from the portable dry additive silo shall not exceed 19.18 pounds per hour when operating at a process weight rate of 10 tons per hour.

The pounds per hour limitations were calculated with the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

D.4.2 Particulate Matter (PM) [326 IAC 2-2]

The PM emission from the portable dry additive silo shall not exceed 1.21 pounds per hour, which is equivalent to 5.3 tons per year. Compliance with this limit shall render the requirements of 326 IAC 2-2 not applicable.

D.4.3 Particulate Matter Less Than Ten Microns (PM-10) [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4, the PM-10 emissions from the portable dry additive silo shall not exceed 1.21 pounds per hour, which is equivalent to 5.3 tons per year. Therefore, the requirements of 326 IAC 2-7 do not apply.

D.4.4 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and its control device.

Compliance Determination Requirements

D.4.5 Particulate Matter (PM)

In order to comply with D.4.2 and D.4.3, the baghouse for PM and PM-10 control shall be in operation and control emissions from the portable dry additive silo at all times that the portable dry additive silo is in operation.

Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]

D.4.6 Visible Emissions Notations

- (a) Visible emission notations of the portable dry additive silo stack exhaust shall be performed once per shift during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed. Failure to take response steps in accordance with Section C - Compliance Response Plan -Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.

D.4.7 Parametric Monitoring

The Permittee shall record the total static pressure drop across the baghouse used in conjunction with the portable dry additive silo, at least once per shift when the portable dry additive silo is in operation. When or any one reading, the pressure drop across the baghouse is outside the normal range of 3.0 and 6.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Compliance Response Plan -Failure to Take Response. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Compliance Response Plan -Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.

The instrument used for determining the pressure shall comply with Section C - Pressure Gauge and Other Instruments Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

D.4.8 Baghouse Inspections

An inspection shall be performed each calendar quarter of all bags controlling the portable dry additive silo when venting to the atmosphere. A baghouse inspection shall be performed within three months of redirecting vents to the atmosphere and every three months thereafter. Inspections are optional when venting to the indoors. All defective

bags shall be replaced.

D.4.9 Broken or Failed Bag Detection

In the event that bag failure has been observed:

- (a) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if there are no visible emissions or if the event qualifies as an emergency and the Permittee satisfies the emergency provisions of this permit (Section B- Emergency Provisions). Within eight (8) business hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised within eight (8) business hours of discovery of the failure and shall include a timetable for completion. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.
- (b) For single compartment baghouses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

D.4.10 Record Keeping Requirements

- (a) To document compliance with Condition D.4.6, the Permittee shall maintain records of visible emission notations of the portable dry additive silo stack exhaust once per shift.
- (b) To document compliance with Condition D.4.7, the Permittee shall maintain the per shift records of the total differential static pressure during normal operation.
- (c) To document compliance with Condition D.4.8, the Permittee shall maintain records of the results of the inspections required under Condition D.4.8 and the dates the vents are redirected.
- (d) All records shall be maintained in accordance with Section C - General Record

Keeping Requirements, of this permit.

Conclusion

The operation of this stationary hot mix asphalt plant shall be subject to the conditions of the attached proposed Significant Permit Revision No. 019-15940-03109.

Company Name:
Plant Location:
County:
Date:
Permit Reviewer:
Modified By:

Sellersburg Stone Company
1019 E. Utica St., Sellersburg, IN 47172
Clark
April 15, 2002
Adeel Yousuf / EVP
Alic Bent/EVP

**** general facility information ****

This source has the capability to operate a 600 ton/hr drum mix dryer with a dryer burner rated at 200 MMBtu/hr and a 300 ton/hr drum mix dryer with a dryer burner rated at 116 MMBtu/hr.

**** Three (3) natural gas fired hot oil heaters****

The following calculations determine the amount of emissions created by natural gas combustion, from hot oil heating, based on 8,760 hours of operation and US EPA's AP-42, 5th Edition, Section 1.4 - Natural Gas Combustion, Tables 1.4-1, 1.4-2, and 1.4-3.

Criteria Pollutant: 1 $\frac{5 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{1000 \text{ Btu/cf} \times 2,000 \text{ lb/ton}}$ * Ef (lb/MMcf) = (ton/yr)

P M:	7.6 lb/MMcf =	0.17 ton/yr
P M-10:	7.6 lb/MMcf =	0.17 ton/yr
S O 2:	0.6 lb/MMcf =	0.0131 ton/yr
N O x:	100.0 lb/MMcf =	2.19 ton/yr
V O C:	5.5 lb/MMcf =	0.12 ton/yr
C O:	84.0 lb/MMcf =	1.84 ton/yr

Criteria Pollutant: 2 $\frac{1.5 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{1000 \text{ Btu/cf} \times 2,000 \text{ lb/ton}}$ * Ef (lb/MMcf) = (ton/yr)

P M:	7.6 lb/MMcf =	0.05 ton/yr
P M-10:	7.6 lb/MMcf =	0.05 ton/yr
S O 2:	0.6 lb/MMcf =	0.00 ton/yr
N O x:	100.0 lb/MMcf =	0.66 ton/yr
V O C:	5.5 lb/MMcf =	0.04 ton/yr
C O:	84.0 lb/MMcf =	0.55 ton/yr

Criteria Pollutant: 3 $\frac{1.4 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{1000 \text{ Btu/cf} \times 2,000 \text{ lb/ton}}$ * Ef (lb/MMcf) = (ton/yr)

P M:	7.6 lb/MMcf =	0.05 ton/yr
P M-10:	7.6 lb/MMcf =	0.05 ton/yr
S O 2:	0.6 lb/MMcf =	0.00 ton/yr
N O x:	100.0 lb/MMcf =	0.66 ton/yr
V O C:	5.5 lb/MMcf =	0.04 ton/yr
C O:	84.0 lb/MMcf =	0.55 ton/yr

**** drum-mix aggregate dryer burner****

The following calculations determine the amount of emissions created by natural gas combustion, from the aggregate dryer burner, based on 8,760 hours of operation and US EPA's AP-42, 5th Edition, Section 1.4 - Natural Gas Combustion, Tables 1.4-1, and 1.4-2. Max. Capacity = 600 tons / hr

Criteria Pollutant:	$\frac{200 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{1000 \text{ MMBtu/MMcf}} \times 2,000 \text{ lb/ton}$	* Ef (lb/MMcf) = (ton/yr)
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P M:	1.9 lb/MMcf =	1.66 ton/yr
P M-10:	7.6 lb/MMcf =	6.66 ton/yr
S O 2:	0.6 lb/MMcf =	0.53 ton/yr
N O x:	190.0 lb/MMcf =	166.44 ton/yr
V O C:	5.5 lb/MMcf =	4.82 ton/yr
C O:	84.0 lb/MMcf =	73.58 ton/yr

**** drum-mix aggregate dryer burner****

The following calculations determine the amount of emissions created by natural gas combustion, from the aggregate dryer burner, based on 8,760 hours of operation and US EPA's AP-42, 5th Edition, Section 1.4 - Natural Gas Combustion, Tables 1.4-1, and 1.4-2. Max. Capacity = 300 tons / hr

Criteria Pollutant:	$\frac{116 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{1000 \text{ MMBtu/MMcf}} \times 2,000 \text{ lb/ton}$	* Ef (lb/MMcf) = (ton/yr)
----------------------------	---	---------------------------

P M:	1.9 lb/MMcf =	0.97 ton/yr
P M-10:	7.6 lb/MMcf =	3.86 ton/yr
S O 2:	0.6 lb/MMcf =	0.30 ton/yr
N O x:	190.0 lb/MMcf =	96.54 ton/yr
V O C:	5.5 lb/MMcf =	2.79 ton/yr
C O:	84.0 lb/MMcf =	42.68 ton/yr

The following calculations determine the amount of emissions created by the combustion of #2 distillate fuel oil
@ 0.5 % sulfur, from the aggregate dryer burner, based on 8,760 hours of use and US EPA's AP-42, 5th Edition, Section 1.3 - Fuel Oil Combustion, Tables 1.3-1, 1.3-3, and 1.3-7.

Criteria Pollutant:	$\frac{116 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{140,000 \text{ Btu/gal} \times 2,000 \text{ lb/ton}}$	* Ef (lb/1,000 gal) = (ton/yr)
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P M:	2.0 lb/1000 gal =	7.26 ton/yr
P M-10:	1.0 lb/1000 gal =	3.63 ton/yr
S O 2:	78.5 lb/1000 gal =	284.89 ton/yr
N O x:	24.0 lb/1000 gal =	87.10 ton/yr
V O C:	0.20 lb/1000 gal =	0.73 ton/yr
C O:	5.0 lb/1000 gal =	18.15 ton/yr

The following calculations determine the amount of emissions created by the combustion of #6 residual fuel oil
@ 1.67 % sulfur, from the aggregate dryer burner, based on 8,760 hours of use and US EPA's AP-42, 5th Edition, Section 1.3 - Fuel Oil Combustion, Tables 1.3-1, 1.3-4, and 1.3-6.

Criteria Pollutant:	$\frac{116 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{150,000 \text{ Btu/gal} \times 2,000 \text{ lb/ton}}$	* Ef (lb/1,000 gal) = (ton/yr)
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P M:	18.6 lb/1000 gal =	62.89 ton/yr
P M-10:	18.6 lb/1000 gal =	63.00 ton/yr
S O 2:	262.2 lb/1000 gal =	888.09 ton/yr
N O x:	47.0 lb/1000 gal =	159.20 ton/yr
V O C:	1.04 lb/1000 gal =	3.52 ton/yr
C O:	5.0 lb/1000 gal =	16.94 ton/yr

The maximum potential emissions from the 116 mmBtu/hr aggregate dryer burner due to fuel combustion:

Criteria Pollutant:		Worst Case Fuel
P M:	62.89 ton/yr	No. 6 Residual Fuel Oil
P M-10:	54.09 ton/yr	No. 6 Residual Fuel Oil
S O 2:	888.09 ton/yr	No. 6 Residual Fuel Oil
N O x:	159.20 ton/yr	No. 6 Residual Fuel Oil
V O C:	3.52 ton/yr	No. 6 Residual Fuel Oil
C O:	42.68 ton/yr	Natural Gas

Total maximum potential emissions from the aggregate dryer burners due to fuel combustion are the following:

Criteria Pollutant:	
P M:	64.56 ton/yr
P M-10:	60.74 ton/yr
S O 2:	888.62 ton/yr
N O x:	325.64 ton/yr
V O C:	8.34 ton/yr
C O:	116.26 ton/yr

**** aggregate drying: drum-mix plant ****

The following calculations determine the amount of worst case emissions created by aggregate drying before controls, based on 8,760 hours of use and USEPA's AP-42, 5th Edition, Section 11.1 - Hot Mix Asphalt Plants, Tables 11.1-3 and 11.1-8 for a drum mix dryer which has the capability of combusting either fuel oil or natural gas:

Pollutant:	Ef	lb/ton x	600	ton/hr x	8,760 hr/yr
			2,000	lb/ton	

Criteria Pollutant:			
P M:	28	lb/ton =	73,584 ton/yr
P M-10:	6.5	lb/ton =	17,082 ton/yr
VOC:	7.95E-03	lb/ton =	21 ton/yr

The VOC emission factor represents the sum of the HAP emission factors from the dryer which were assumed to be VOC.

**** aggregate drying: drum-mix plant ****

The following calculations determine the amount of worst case emissions created by aggregate drying before controls, based on 8,760 hours of use and USEPA's AP-42, 5th Edition, Section 11.1 - Hot Mix Asphalt Plants, Tables 11.1-3 and 11.1-8 for a drum mix dryer which has the capability of combusting either fuel oil or natural gas:

Pollutant:	Ef	lb/ton x	300	ton/hr x	8,760 hr/yr
			2,000	lb/ton	

Criteria Pollutant:			
P M:	28	lb/ton =	36,792 ton/yr
P M-10:	6.5	lb/ton =	8,541 ton/yr
VOC:	7.95E-03	lb/ton =	10 ton/yr

The VOC emission factor represents the sum of the HAP emission factors from the dryer which were assumed to be VOC.

Total maximum potential to emit from the aggregate drying (2 dryers combined) are the following:

Criteria Pollutant:	
P M:	110,376 ton/yr
P M-10:	25,623 ton/yr
V O C:	31.33 ton/yr

**** conveying / handling ****

The following calculations determine the amount of emissions created by material handling, based on 8,760 hours of use and AP-42, Section 13.2.4, Equation 1. The emission factors for calculating PM/PM10 emissions are calculated as follows:

PM/PM10 Emissions:

$$\begin{aligned} E &= k \cdot (0.0032) \cdot ((U/5)^{1.3}) / ((M/2)^{1.4}) \\ &= 2.62E-03 \text{ lb PM/ton} \\ &= 1.24E-03 \text{ lb PM-10/ton} \end{aligned}$$

where k = 0.74 (particle size multiplier for <30um)
0.35 (particle size multiplier for <10um)

U = 12 mph mean wind speed
M = 4.2 material moisture content (%)

$$\frac{900 \text{ ton/hr} \times 8,760 \text{ hr/yr} \times E_f \text{ (lb/ton of material)}}{2,000 \text{ lb/ton}} = \text{(ton/yr)}$$

Total PM Emissions: 10.31 tons/yr
Total PM10 Emissions: 4.88 tons/yr

**** unpaved roads ****

The following calculations determine the amount of emissions created by vehicle traffic on unpaved roads, based on 8,760 hours of use and AP-42, Section 13.2.2.2.

I. Dump Truck

$$15 \text{ trip/hr} \times 0.189 \text{ mile/trip} \times 2 \text{ (round trip)} \times 8,760 \text{ hr/yr} = 49,669 \text{ mile/yr}$$

$$\begin{aligned} E_f &= k \cdot [(s/12)^a] \cdot [(W/3)^b] / [(M_{dry}/0.2)^c] \cdot [(365-p)/365] \cdot (S/15) \\ &= 5.57 \text{ lb PM/mile} \\ &= 1.19 \text{ lb PM-10/mile} \end{aligned}$$

where k = 10 (particle size multiplier, PM30) (k= 2.6 for PM10)
s = 4.8 mean % silt content of unpaved plant roads
a = 0.8 Constant for PM30/PM-10
W = 21 tons, average vehicle weight
b = 0.5 Constant for PM30 (b = 0.4 for PM10)
Mdry = 0.2 surface material moisture content, % (default 0.2 (dry conditions) when using rainfall parameter)
c = 0.4 Constant for PM30 (c = 0.3 for PM10)
p = 125 number of days with at least 0.01 in of precipitation per year
S = 10 mph speed limit

$$\text{PM : } \frac{5.57 \text{ lb/mi} \times 49,669.2 \text{ mi/yr}}{2,000 \text{ lb/ton}} = 138.38 \text{ tons/yr}$$

$$\text{PM-10 : } \frac{1.19 \text{ lb/mi} \times 49,669.2 \text{ mi/yr}}{2,000 \text{ lb/ton}} = 29.62 \text{ tons/yr}$$

II. Front End Loader

$$79.2 \text{ trip/hr} \times 0.05 \text{ mile/trip} \times 2 \text{ (round trip)} \times 8,760 \text{ hr/yr} = 69,379 \text{ mile/yr}$$

$$\begin{aligned} E_f &= k \cdot [(s/12)^a] \cdot [(W/3)^b] / [(M_{dry}/0.2)^c] \cdot [(365-p)/365] \cdot (S/15) \\ &= 3.49 \text{ lb PM/mile} \\ &= 0.91 \text{ lb PM-10/mile} \end{aligned}$$

where k =	10	(particle size multiplier, PM30)	(k= 2.6 for PM10)
s =	4.8	mean % silt content of unpaved plant roads	
a =	0.8	Constant for PM30/PM-10	
W =	33	tons, average vehicle weight	
b =	0.5	Constant for PM30 (b = 0.4 for PM10)	
Mdry =	0.2	surface material moisture content, % (default 0.2 (dry conditions) when using rainfall parameter)	
c =	0.4	Constant for PM30 (c = 0.3 for PM10)	
p =	125	number of days with at least 0.01 in of precipitation per year	
S =	5	mph speed limit	

$$\text{PM : } \frac{3.49 \text{ lb/mi} \times 69,379 \text{ mi/yr}}{2000 \text{ lb/ton}} = 121.15 \text{ tons/yr}$$

$$\text{PM-10 : } \frac{0.91 \text{ lb/mi} \times 69,379 \text{ mi/yr}}{2000 \text{ lb/ton}} = 31.50 \text{ tons/yr}$$

** unpaved roads **

III. Triaxle Dump Truck

$$8.25 \text{ trip/hr} \times 0.15 \text{ mile/trip} \times 2 \text{ (round trip)} \times 8,760 \text{ hr/yr} = 21,681 \text{ mile/yr}$$

$$\begin{aligned} E_f &= k \cdot [(s/12)^a] \cdot [(W/3)^b] / [(M_{dry}/0.2)^c] \cdot [(365-p)/365] \cdot (S/15) \\ &= 5.57 \text{ lb PM/mile} \\ &= 1.45 \text{ lb PM-10/mile} \end{aligned}$$

where k =	10	(particle size multiplier, PM30)	(k= 2.6 for PM10)
s =	4.8	mean % silt content of unpaved plant roads	
a =	0.8	Constant for PM30/PM-10	
W =	21	tons, average vehicle weight	
b =	0.5	Constant for PM30 (b = 0.4 for PM10)	
Mdry =	0.2	surface material moisture content, % (default 0.2 (dry conditions) when using rainfall parameter)	
c =	0.4	Constant for PM30 (c = 0.3 for PM10)	
p =	125	number of days with at least 0.01 in of precipitation per year	
S =	10	mph speed limit	

$$\frac{5.57 \text{ lb/mi} \times 21,681 \text{ mi/yr}}{2000 \text{ lb/ton}} = 60.41 \text{ tons/yr}$$

$$\frac{1.45 \text{ lb/mi} \times 21,681 \text{ mi/yr}}{2000 \text{ lb/ton}} = 15.71 \text{ tons/yr}$$

Total PM Emissions From Unpaved Roads = 319.94 tons/yr
Total PM-10 Emissions From Unpaved Roads = 76.82 tons/yr

**** dry additive silo ****

Grain Loading per Actual Cubic Foot of Outlet Air	Air Flow Rate (dscfm)	Control Efficiency (%)	PM Emissions (tons/yr)	PM-10 Emissions (tons/yr)
0.04	1090.0	86.20%	11.86	11.86

Potential Emissions (tons/yr) = Loading (gr/dscfm) * Air Flow Rate (dscfm) * 60 min/hr * 1 lb/7,000 grains * 8760 hr/yr * 1 ton/2,000 lbs * 1/(1-Control Efficiency)

**** storage ****

The following calculations determine the amount of emissions created by wind erosion of storage stockpiles, based on 8,760 hours of use and USEPA's AP-42 (Pre 1983 Edition), Section 11.2.3.

Material	Silt Content (wt %)	Pile Size (acres)	Storage Capacity (tons)	P M Emissions tons/yr	P M-10 Emissions tons/yr
Sand	0.8	0.500	10,000	0.08	0.03
Limestone	2.0	0.900	15,000	0.38	0.13
RAP	2.0	0.100	2,000	0.04	0.01
Total				0.51	0.18

Sample Calculation for Sand:

$$E_f = 1.7 * (s/1.5) * (365-p)/235 * (f/15)$$

$$= 0.93 \text{ lb/acre/day}$$

where s = 0.8 % silt
p = 125 days of rain greater than or equal to 0.01 inches
f = 15 % of wind greater than or equal to 12 mph

$$E_p (\text{storage}) = E_f * sc * (20 \text{ cuft/ton}) * (365 \text{ day/yr})$$

$$(2,000 \text{ lb/ton}) * (43,560 \text{ sqft/acre}) * (30 \text{ ft for sand, 12 ft for stone and slag, \& 20 ft for RAP})$$

where sc = 10,000 tons storage capacity

PM = 0.03 tons/yr **P M-10:** 35% of PM = **0.01 tons/yr**

The following calculations determine the amount of worst case VOC emissions created by the application of cutback asphalt with a typical value of 35% by volume of diluent, based on 8,760 hours of use and USEPA's AP-42, 5th Edition, Section 4.5, Table 4.5-1.

VOC Emission Factor = 1.7% weight percent flash-off of cold mix
Potential Throughput (tons/yr) = 5,256,000 tons/yr stockpile mix

Potential VOC Emissions (tons/yr) = Potential Throughput (tons/yr) * wt percent flash-off
Potential VOC Emissions = 88,300.80 tons/yr

* Weight percent flash-off is based on a 7.0 percent by weight of cutback asphalt in stockpile mix, of which 24% evaporates based on the cutback asphalt containing 35% by volume of diluent of which 95% evaporates (from Table 4.5-1).

**** summary of source emissions before controls ****

Criteria Pollutants:

P M:	110,783 ton/yr
P M-10:	25,778 ton/yr
S O 2:	889 ton/yr
N O x:	329 ton/yr
C O:	119 ton/yr
V O C:	88,341 ton/yr (includes volatile organic HAPs from aggregate drying operation)

**** source emissions after limitations and controls ****

In order to qualify for the FESOP program, this source must limit SO₂ and NO_x emissions to 99.0 tons per year. Consequently, SO₂ and NO_x emissions from the aggregate dryer must be limited to 98.98 tons per year (99.0 tons per year - 0.0131 tons per year from the hot oil heater) and 95.49 tons per year (99.0 tons per year - 3.51 tons per year from the hot oil heater), respectively.

* Emissions of PM and PM-10 from aggregate drying operations are controlled with a 99.9 control efficiency.

**** source usage limitations ****

The following calculations determine the amount of emissions created by natural gas combustion based on a fuel usage limitation of 1.01E+09 cf

Natural Gas: 1,005,140 MMcf/yr * Ef (lb/MMcf) = (ton/yr)
2,000 lb/ton

P M:	1.9 lb/MMcf =	9.55E-04 ton/yr *
P M-10:	7.6 lb/MMcf =	3.82E-03 ton/yr *
S O 2:	0.6 lb/MMcf =	0.30 ton/yr
N O x:	190.0 lb/MMcf =	95.49 ton/yr
V O C:	5.5 lb/MMcf =	2.76 ton/yr
C O:	84.0 lb/MMcf =	42.22 ton/yr

The following calculations determine the amount of emissions created by No.2 distillate fuel oil @ 0.5 % sulfur based on a fuel usage limitation of 2,521,763 gal/yr:

No. 2 Distillate Oil: 2,521,763 gal/yr * Ef (lb/1,000 gal) = (ton/yr)
2,000 lb/ton

P M:	2.0 lb/1000 gal =	2.52E-03 ton/yr *
P M-10:	1.0 lb/1000 gal =	1.26E-03 ton/yr *
S O 2:	78.5 lb/1000 gal =	98.98 ton/yr
N O x:	24.0 lb/1000 gal =	30.26 ton/yr
V O C:	0.20 lb/1000 gal =	0.25 ton/yr
C O:	5.0 lb/1000 gal =	6.30 ton/yr

The following calculations determine the amount of emissions created by No. 6 residual fuel oil @ 1.67 % sulfur based on a fuel usage limitation of 755,025 gal/yr:

No. 6 Residual Fuel Oil: $\frac{755,025 \text{ gal/yr}}{2000 \text{ lb/ton}} \times \text{Ef (lb/1000 gal)} = (\text{ton/yr})$

P M:	18.6 lb/1000 gal =	7.01E-03 ton/yr *
P M-10:	18.6 lb/1000 gal =	7.02E-03 ton/yr *
S O 2:	262.2 lb/1000 gal =	98.98 ton/yr
N O x:	47.0 lb/1000 gal =	17.74 ton/yr
V O C:	1.04 lb/1000 gal =	0.39 ton/yr
C O:	5.0 lb/1000 gal =	1.89 ton/yr

Criteria Pollutant:

		Worst Case Fuel
P M:	7.01E-03 ton/yr	No. 6 Residual Fuel Oil
P M-10:	7.02E-03 ton/yr	No. 6 Residual Fuel Oil
S O 2:	98.98 ton/yr	No. 6 Residual Fuel Oil
N O x:	95.49 ton/yr	Natural Gas
V O C:	2.76 ton/yr	Natural Gas
C O:	42.22 ton/yr	Natural Gas

**** source emissions after controls ****

Primary Fuel: Natural Gas

95.49 tons NOx/year limited	*	2768.16 MMCF	=	1005.140 MMCF
262.98 tons NOx/year potential		year potential		year limited

Secondary Fuel: #2 distillate oil

98.98 tons SO2/year limited	*	7,258 Kgals	=	2,522 Kgals
284.89 tons SO2/year potential		year potential		year limited

Fuel equivalence limit for natural gas based on NOx emissions from #2 distillate fuel oil:

87.10 #2 F.O. potential emissions (/	96.54 n.g. potential emis. (ton/yr)
7,258 #2 F.O. potential usage (kgal/yr)		1016.16 n.g. potential usage (MMCF/yr)

= $1.263\text{E-}01 \frac{\text{MMCF n.g. burned}}{\text{No. 2 distillate fuel oil (kgals)}}$

Backup Fuel: # 6

$$\frac{98.98 \text{ tons SO}_2/\text{year limited}}{888.09 \text{ tons SO}_2/\text{year potential}} * \frac{6,774 \text{ Kgals}}{\text{year potential}} = \frac{755.025 \text{ Kgals}}{\text{year limited}}$$

Fuel equivalence limit for #6 residual fuel oil based on SO₂ emissions from #2 distillate fuel oil:

$$\frac{888.09 \text{ \#6 F.O. potential emis. (ton/yr)}}{6,774 \text{ \#6 F.O. potential usage (kgal/yr)}} / \frac{284.89 \text{ \#2 F.O. potential emissions (ton/yr)}}{7258.29 \text{ \#2 F.O. potential usage (kgal/yr)}}$$

$$= 3.3400 \text{ No. 2 distillate fuel oil Kgal \#6 F.O. burned}$$

Fuel equivalence limit for # 6 residual fuel oil based on NO_x emissions from natural gas:

$$\frac{159.20 \text{ \#6 F.O. potential emissions}}{6,774 \text{ \#6 F.O. potential usage (kgal/yr)}} / \frac{96.54 \text{ n.g. potential emis. (ton/yr)}}{1016.16 \text{ n.g. potential usage (MMCF/yr)}}$$

$$= 2.474\text{E-}01 \text{ MMCF n.g. burned No. 6 distillate fuel oil (kgals)}$$

**** source emissions after controls ****

hot oil heaters:		nonfuaitive	
P M:	0.27 ton/yr x	100.00%	emitted after controls = 0.27 ton/yr
P M-10:	0.27 ton/yr x	100.00%	emitted after controls = 0.27 ton/yr
aggregate drying:		nonfuaitive	
P M:	110,441 ton/yr x	0.10%	emitted after controls = 110.44 ton/yr *
P M-10:	25,684 ton/yr x	0.10%	* emitted after controls = 25.68 ton/yr *

The source is limiting hot mix production to 4,000,000 tons per year.

P M:	110.44 ton/yr x	nonfuaitive	<u>4,000,000 Limited Throughput (tons/yr)</u>	56.03 ton/yr
			7,884,000 Potential Throughput (tons/yr)	
P M-10:	25.68 ton/yr x	nonfuaitive	<u>4,000,000 Limited Throughput (tons/yr)</u>	13.03 ton/yr
			7,884,000 Potential Throughput (tons/yr)	
conveying & handling:		fuaitive		
P M:	10.31 ton/yr x	50%	emitted after controls =	5.16 ton/yr
P M-10:	4.88 ton/yr x	50%	emitted after controls =	2.44 ton/yr
unpaved roads:		fuaitive		
P M:	319.94 ton/yr x	50%	emitted after controls =	159.97 ton/yr
P M-10:	76.82 ton/yr x	50%	emitted after controls =	38.41 ton/yr
dry additive silo:		fuaitive		
P M:	11.86 ton/yr x	14%	emitted after controls =	1.64 ton/yr
P M-10:	11.86 ton/yr x	14%	emitted after controls =	1.64 ton/yr
storage piles:		fuaitive		
P M:	0.51 ton/yr x	50%	emitted after controls =	0.25 ton/yr
P M-10:	0.18 ton/yr x	50%	emitted after controls =	0.09 ton/yr

cold mix VOC storage: fugitive
VOC: Limited Emissions =
 99.0 - VOC emissions from aggregate drying and fuel Combustion) **80.15 ton/yr**

aggregate drying fugitive
VOC: 15.89 ton/yr x 100% emitted after controls = **15.89 ton/yr**
 based on annual production limit of 4,000,000 tons of asphalt produced.

**** summary of source emissions after limitations/controls ****

Criteria Pollutant:	Non-Fugitive	Fugitive	Total
PM:	78.32 ton/yr	167.02 ton/yr	245.34 ton/yr
PM-10:	52.76 ton/yr	42.58 ton/yr	95.34 ton/yr
S O 2:	99.00 ton/yr	0.00 ton/yr	99.00 ton/yr
N O x:	98.34 ton/yr	0.00 ton/yr	98.34 ton/yr
V O C:	2.92 ton/yr	96.04 ton/yr	98.96 ton/yr
C O:	44.61 ton/yr	0.00 ton/yr	44.61 ton/yr

**** miscellaneous ****

326 IAC 7 Compliance Calculations:

The following calculations determine the maximum sulfur content of distillate fuel oil (No. 2 Oil) allowable by 326 IAC 7:

$$0.5 \text{ lb/MMBtu} \times 140,000 \text{ Btu/gal} = 70 \text{ lb/1000gal}$$

$$70 \text{ lb/1000gal} / 144 \text{ lb/1000 gal} = 0.5 \%$$

Sulfur content must be less than or equal to 0.5% to comply with 326 IAC 7.

The following calculations determine the maximum sulfur content of residual oil (No. 6 Oil) allowable by 326 IAC 7:

$$1.6 \text{ lb/MMBtu} \times 150,000 \text{ Btu/gal} = 240 \text{ lb/1000gal}$$

$$240 \text{ lb/1000gal} / 144 \text{ lb/1000 gal} = 1.67 \%$$

Sulfur content must be less than or equal to 1.67% to comply with 326 IAC 7.

326 IAC 6-1-2 Compliance Calculations:

The following calculations determine allowables based on 326 IAC 6-1-2, which limits stack emissions from this asphalt plant to 0.03 gr/dscf:

600 Tons per Hour Drum-Mix Plant:

$$0.03 \text{ grain/dscf} \times 90,000 \text{ acfm} \times (460 + 68 / 460 + 300) \text{ Temp} \times ((100 - 2.0) / 100) \% \text{ moisture} \times (525600 \text{ minute/year}) \times (1 \text{ lb/ 7000 grain}) \times (1 \text{ ton / 2000 lb}) = 69.01 \text{ tons/yr}$$

$$15.76 \text{ lb/hr}$$

300 Tons per Hour Drum-Mix Plant:

$$0.03 \text{ grain/dscf} \times 58255 \text{ acfm} \times (460 + 68 / 460 + 280) \text{ Temp} \times ((100 - 2.0) / 100) \% \text{ moisture} \times (525600 \text{ minute/year}) \times (1 \text{ lb/ 7000 grain}) \times (1 \text{ ton / 2000 lb}) = 45.88 \text{ tons/yr}$$

$$10.47 \text{ lb/hr}$$

40 CFR Part 60.90, Subpart I (Standards of Performance for Hot Mix Asphalt Plants) Compliance Calculations:

The following calculations determine compliance with NSPS, which limits stack emissions from asphalt plants to 0.04 gr/dscf:

*** SV #1: Drum-mix Dryer (600 tph) ***

$$\frac{37.36 \text{ ton/year}}{61,276 \text{ dscf/min}} \times \frac{2,000 \text{ lb/ton}}{525,600 \text{ min/year}} \times \frac{7,000 \text{ gr/lb}}{1} = 0.016 \text{ gr/dscf} \quad (\text{will comply})$$

Allowable particulate emissions under NSPS (0.04 gr/dscf) equate to: 92.02 tons per year, or: 21.01 lb/hr

*** SV2-1: Drum-mix Dryer (300 tph)***

$$\frac{18.68 \text{ ton/year}}{40,734 \text{ dscf/min}} \times \frac{2,000 \text{ lb/ton}}{525,600 \text{ min/year}} \times \frac{7,000 \text{ gr/lb}}{1} = 0.012 \text{ gr/dscf} \quad (\text{will comply})$$

Allowable particulate emissions under NSPS (0.04 gr/dscf) equate to: 61.17 tons per year, or: 13.97 lb/hr

Note:

$$\begin{aligned} \text{SCFM} &= 90,000 \text{ acfm} * (460 + 68) * (1-0.02) / (460 + 300) \\ &= 61,276 \text{ scfm (assumed 2\% moisture)} \end{aligned}$$

$$\begin{aligned} \text{SCFM} &= 58,255 \text{ acfm} * (460 + 68) * (1-0.02) / (460 + 280) \\ &= 40,734 \text{ scfm (assumed 2\% moisture)} \end{aligned}$$

PSD PM Emission Limit for Drum-Mix & Batch Plant Aggregate Dryers:

Source-wide emissions of PM must be less than 250 tons per year such that the requirements of 326 IAC 2-2 (PSD) are not applicable. Therefore, PM from the 2 aggregate dryers shall be limited as follows:

$$249 \text{ tons PM/yr} - 171.95 \text{ tons PM from other sources} = < 78.05 \text{ ton/yr} = < 17.82 \text{ lbs/hr}$$

Total PM from aggregate dryers controlled to: 56.03 tons/yr < 78.05 ton/yr (will comply)

Allowable PM emissions for PSD non-applicability are apportioned to the two aggregate drying facilities as follows:

Drum-Mix Plant Aggregate Dryer (SV # 1; 600tph):

$$600 \text{ tons/hr} / 900 \text{ tons/hr (total)} * 78.05 \text{ tons/yr} = 52.04 \text{ tons/yr}$$

Total production capacity per year 2666666.67 tons/yr (based on the combined plant 1 & 2 production capacity limit of 4,000,000 tons of asphalt produced per year)

To comply with the allowable limit of 52.04 tons/yr, the emission factor for compliance = 0.039 lb PM/ton, and
the control efficiency needed for compliance = 99.9% , and
the equivalent pounds/hour at 8760 hours year = 11.88 lb/hr

Drum-Mix Plant Aggregate Dryer (SV2-1; 300 tph):

300 tons/hr / 900 tons/hr (total) * 78.05 tons/yr = 26.02 tons/yr

Total production capacity per year 1333333.33 tons/yr (based on the combined plant 1 & 2 production capacity limit of 4,000,000 tons of asphalt produced per year)

To comply with the allowable limit of 26.02 tons/yr, the emission factor for compliance = 0.039 lb PM/ton, and
the control efficiency needed for compliance = 99.9% , and
the equivalent pounds/hour at 8760 hours year = 5.94 lb/hr

FESOP PM10 Emission Limit for Drum-Mix & Batch Plant Aggregate Dryers:

Source-wide emissions of PM10 must be less than 100 tons per year for FESOP applicability. Therefore, PM10 from the 2 aggregate dryers shall be limited as follows:

99 tons PM10/yr - 47.50 tons PM10 from other sources= < 52.50 ton/yr = < 11.99 lbs/hr

Total PM10 from aggregate dryers controlled to: 13.03 tons/yr < 52.50 ton/yr (will comply)

Allowable PM10 emissions for FESOP compliance are apportioned to the two aggregate drying facilities as follows:

Drum-Mix Plant Aggregate Dryer (SV # 1; 600tph):

600 tons/hr / 900 tons/hr (total) * 52.50 tons/yr = 35.00 tons/yr

Using the AP-42 emission factor of 6.5 lb PM10/ton, the potential PM emission rate = 8665.80 tons/yr (based on the production capacity limit of 4,000,000 tons of asphalt produced per year and 4,444 hours of operation per year)

To comply with the allowable limit of 35.00 tons/yr, the emission factor for compliance = 0.026 lb PM10/ton, and
the control efficiency needed for compliance = 99.6% , and
the equivalent pounds/hour at 8760 hours year = 7.99 lb/hr

Drum-Mix Plant Aggregate Dryer (SV2-1; 300 tph):

300 tons/hr / 900 tons/hr (total) * 52.50 tons/yr = 17.50 tons/yr

Using the AP-42 emission factor of 6.5 lb PM10/ton, the potential PM emission rate = 4332.90 tons/yr (based on the production capacity limit of 4,000,000 tons of asphalt produced per year and 4,444 hours of operation per year)

To comply with the allowable limit of 17.50 tons/yr, the emission factor for compliance = 0.026 lb PM10/ton, and
the control efficiency needed for compliance = 99.6% , and
the equivalent pounds/hour at 8760 hours year = 4.00 lb/hr

Hazardous Air Pollutants (HAPs)

** aggregate dryer burner**

The following calculations determine the amount of HAP emissions created by the combustion of distillate fuel oil before & after controls @ 0.5% sulfur, from the aggregate dryer burner, based on 8760 hours of use and US EPA's AP-42, 5th Edition, Section 1.3 - Fuel Oil Combustion, Table 1.3-11.

Hazardous Air Pollutants (HAPs): $\frac{323.9 \text{ MMBtu/hr} \times 8760 \text{ hr/yr}}{2,000 \text{ lb/ton}} \times \text{Ef (lb/10}^6 \text{ Btu)} = (\text{ton/yr})$

		Potential To Emit	Limited Emissions
Arsenic	4.2 lb/10 ⁶ Btu =	5.96E-03 ton/yr	5.96E-06 ton/yr
Beryllium:	2.5 lb/10 ⁶ Btu =	3.55E-03 ton/yr	3.55E-06 ton/yr
Cadmium:	11 lb/10 ⁶ Btu =	1.56E-02 ton/yr	1.56E-05 ton/yr
Chromium:	67 lb/10 ⁶ Btu =	9.51E-02 ton/yr	9.51E-05 ton/yr
Lead:	8.9 lb/10 ⁶ Btu =	1.26E-02 ton/yr	1.26E-05 ton/yr
Manganese:	14 lb/10 ⁶ Btu =	1.99E-02 ton/yr	1.99E-05 ton/yr
Mercury:	3 lb/10 ⁶ Btu =	4.26E-03 ton/yr	4.26E-06 ton/yr
Nickel:	170 lb/10 ⁶ Btu =	2.41E-01 ton/yr	2.41E-04 ton/yr
Total HAPs =		3.98E-01 ton/yr	3.98E-04 ton/yr

* * aggregate drying: drum-mix plant * *

The following calculations determine the amount of HAP emissions created by aggregate drying before & after controls, based on 8,760 hours of use and USEPA's AP-42, 5th Edition, Section 11.1 - Hot Mix Asphalt Plants, Table 11.1-10 for a drum mix dryer which can be fired with either fuel oil or natural gas. The HAP emission factors represent the worst case emissions (fuel oil combustion).

Pollutant:	Ef	lb/ton x	Potential 900 2000	ton/hr x	8760 hr/yr	Limited 457 tons/hr
			lb/ton			based on annual production limit of 4,000,000 tons of asphalt produced.

Hazardous Air Pollutants (HAPs):

		Potential To Emit	Limited Emissions
Benzene:	3.9E-04 lb/ton =	1.54 ton/yr	0.78 ton/yr
Ethylbenzene:	2.4E-04 lb/ton =	0.95 ton/yr	0.48 ton/yr
Formaldehyde:	3.1E-03 lb/ton =	12.22 ton/yr	6.20 ton/yr
Hexane:	9.2E-04 lb/ton =	3.63 ton/yr	1.84 ton/yr
Isooctane:	4.0E-05 lb/ton =	0.16 ton/yr	0.08 ton/yr
PAH (total) HAPs:*	1.1E-04 lb/ton =	0.43 ton/yr	0.22 ton/yr
Methyl chloroform:	4.8E-05 lb/ton =	0.19 ton/yr	0.10 ton/yr
Toluene:	2.9E-03 lb/ton =	11.43 ton/yr	5.80 ton/yr
Xylene:	2.0E-04 lb/ton =	0.79 ton/yr	0.40 ton/yr
7.95E-03 Total HAPs =		31.33 ton/yr	15.89 ton/yr

* See AP-42, Section 11.1, Table 11.1-9 for complete listing of PAH HAPs.

**** summary of source HAP emissions potential to emit ****

Hazardous Air Pollutants (HAPs):

Arsenic:	0.006 ton/yr
Benzene:	1.537 ton/yr
Beryllium:	0.004 ton/yr
Cadmium:	0.016 ton/yr
Chromium:	0.095 ton/yr
Ethylbenzene:	0.946 ton/yr
Formaldehyde:	12.220 ton/yr
Hexane:	3.627 ton/yr
Isooctane:	0.158 ton/yr
Methyl chloroform:	0.189 ton/yr
Lead:	0.013 ton/yr
Manganese:	0.020 ton/yr
Mercury:	0.004 ton/yr
Nickel:	0.241 ton/yr
PAH (total) HAPs:*	0.43 ton/yr
Toluene:	11.43 ton/yr
Xylene:	0.79 ton/yr
Total:	31.725 ton/yr

**** summary of source HAP limited emissions ****

Hazardous Air Pollutants (HAPs):

Arsenic:	5.81E-06 ton/yr
Benzene:	0.780 ton/yr
Beryllium:	3.46E-06 ton/yr
Cadmium:	1.52E-05 ton/yr
Chromium:	9.27E-05 ton/yr
Ethylbenzene:	0.480 ton/yr
Formaldehyde:	6.200 ton/yr
Hexane:	1.840 ton/yr
Isooctane:	0.080 ton/yr
Methyl chloroform:	0.096 ton/yr
Lead:	1.23E-05 ton/yr
Manganese:	1.94E-05 ton/yr
Mercury:	4.15E-06 ton/yr
Nickel:	2.35E-04 ton/yr
PAH (total) HAPs:*	0.22 ton/yr
Toluene:	5.80 ton/yr
Xylene:	0.40 ton/yr
Total:	15.894 ton/yr